# JUNEAU MONITORING SITES

## General Information

Juneau is a unified home rule municipality, and the third largest city in Alaska. The City and Borough of Juneau has a population[1] of 30,852. Figure 1 is a topographical map showing the entire Juneau area and surrounding geographical features. Juneau is located on the Inside Passage in South-East Alaska.

The city is situated on Gastineau Channel across from Douglas Island. The area encompasses 2,594 square miles of land and 488 square miles of water.


Figure 1 – Topographical map of Juneau area (scale = 1:250,000). Red circles indicate monitoring sites.

Juneau has a mild, maritime climate. Average summer temperatures range from 44°F to 65°F; winter temperatures range from 25°F to 35°F. It is in the mildest climate zone in Alaska. Annual precipitation is 92 inches in downtown Juneau, and 54 inches ten miles north at the airport. Snowfall averages 101 inches.

[1] Population data certified December, 1999 by the Department of Community and Economic Development.

There are two monitoring sites in the Juneau and both are operated by Alaska Department of Environmental Conservation staff. Both of the sites are used to particulate matter.

The sites are (in order of AIRS ID number):

02-110-0004 Floyd Dryden Middle School ($PM_{10}$ and $PM_{2.5}$)

02-110-0026 Lemon Creek ($PM_{2.5}$)

The Floyd Dryden site description was completed in July 1998. The Lemon Creek site description is included here.

# FLOYD DRYDEN MIDDLE SCHOOL SITE - JUNEAU

**6205 Glacier Highway** **AIRS ID 02-110-00**

**Prepared 06 Sept, 2001**

**Site Information**

The site is located on the roof of Floyd Dryden Middle School in the Mendenhall Valley of Juneau. The latitude is 58° 23' 30", and the longitude is –134° 33' 30". The ground elevation is 15 meters. Figure 3 is an aerial photograph of the area around Floyd Dryden Middle School and Figure 4 is a street map of the Mendenhall Valley. The site is located in the middle of a residential area. Both $PM_{2.5}$ and $PM_{10}$ samplers are operated at this site.

The location is suburban and residential. The site is within the South-East Alaska air quality control region (AIRS AQCR= 011), and is not within any metropolitan statistical area (AIRS MSA= 0000). The school is on the east side of the Mendenhall Valley, which runs north to south for approximately 8 kilometers and is approximately 3 kilometers wide. Floyd Dryden is a neighborhood-scale, population-oriented site.

Figure 2 – Aerial photo of the Floyd Dryden Middle School area. The red circle indicates the monitoring site.

**Traffic**

The Floyd Dryden site is approximately 65 meters east of Mendenhall Loop Road (the main roadway into the valley; 12,770 vehicles per day). The roads are paved and, in the winter, sanded for traction. This material is re-entrained during winter and early spring whenever high wind occurs with dry weather.

The monitors are on the far side of the school from the parking lot.


Figure 3 – Street map of the Mendenhall Valley.

**Sources**

The Mendenhall Valley is isolated by tall mountains from the Lemon Creek Valley and Juneau proper to the south. With few exceptions, pollution sources outside the valley are not expected to impact the monitoring site at Floyd Dryden Middle School. The sources of particulate matter within the Lemon Creek Valley include: residential wood smoke, ballfields and playgrounds, automobile exhaust, and fugitive dust.

Juneau International Airport (1050 passengers daily average enplanement) is 3.5 kilometers away at the south end of Mendenhall Valley, and may affect the Floyd Dryden site when winds are from the south. Within 8 kilometers are a gravel pit and the Mendenhall Glacier, both of which may cause crustal material to be re-entrained during favorable metreorological conditions. On occasion wildfire smoke from Western Canada has been know to impact the Mendenhall Valley, carried by long range transport.

**Monitors**

The sampler will be installed on the roof of Floyd Dryden Middle School, approximately 6 meters above the ground. There is a furnace flue approximately 20 meters away, and an incinerator vent approximately 70 meters away. There is also a nearby dryer vent coming out of the building on the ground level directly below the current sampler location. The school has a penthouse which is approxi-mately 4 meters above the roof upon which the sampler will be installed. The nearest penthouse wall is approximately 15 meters from the current sampler location.

The sampler will be installed approximately 65 meters from the nearest traffic lane, with a barrier of approximately 25 meters of tall trees. The trees are approximately 12 meters tall, and came nearest the monitoring site to the north-east at 25 meters. Airflow is generally uninterrupted with the exception of the trees to the north-east. Because the valley rarely experiences winds out of the north and the main problem is woodsmoke, which causes problems when winds are light, the trees are not considered to cause an impact on the collection of valid data.

**Equipment Installed**

The $PM_{2.5}$ samplers are three Rupprecht & Pattashnick Partisol 2000 FRM samplers. The site is operated year round on an every third day schedule. These monitors collect collocated samplers on a 1 in 6 schedule. The monitors were installed on 19 November 1998.

Three General Metal Works high-volume $PM_{10}$ samplers also operate at the site. These samplers are also operated on a 1 in 3 schedule with collocated sampling on every sixth day. These samplers were installed on 01 January 1986.

Figure 4 – Floyd Dryden samplers.  View faces north.

Figure 5 – Floyd Dryden samplers.  View faces west.

Figure 6 – Floyd Dryden samplers. View faces south.

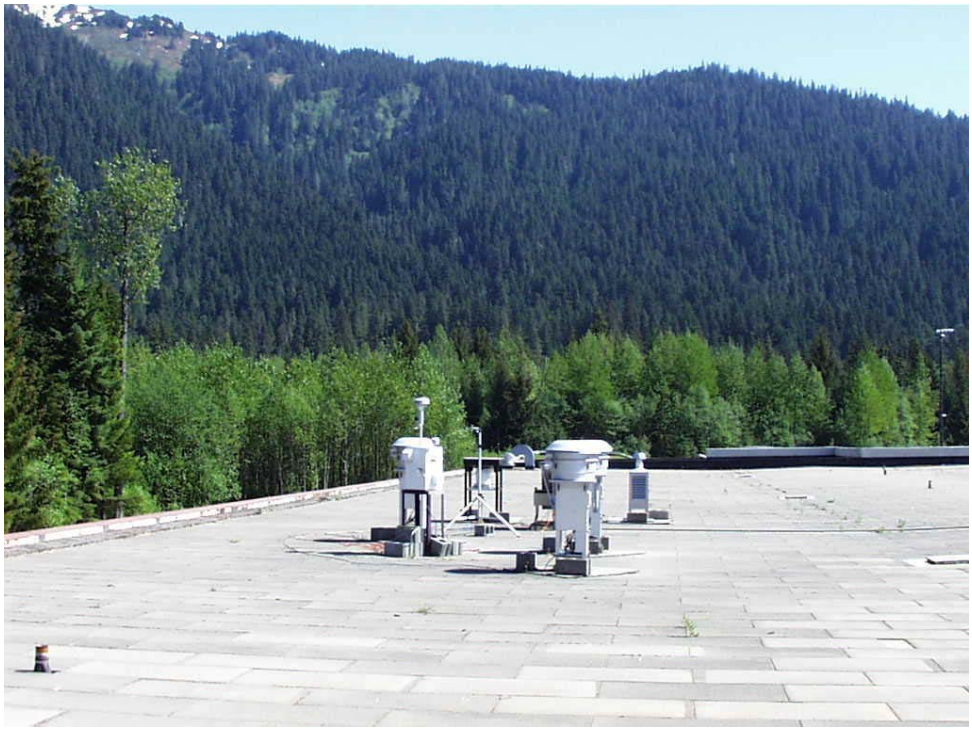

Figure 7 – Floyd Dryden samplers. View faces east.

# LEMON CREEK SITE - JUNEAU

**6205 Glacier Highway** **AIRS ID 02-110-0026**
**Prepared 30 June, 2000**

## Site Information

The site is located on a shed behind R&M Engineering at 6205 Glacier Hwy. The latitude[2] is 58° 21' 33", and the longitude is –134° 30' 31". The ground elevation is 12 meters. Figure 3 is a street map of the local area. The site is located in the middle of the central business district.

The location is urban and commercial. The site is within the South-East Alaska air quality control region (AIRS AQCR= 011), and is not within any metropolitan statistical area (AIRS MSA= 0000). The shed is on the south side of the Glacier Hwy and west of Alaway Avenue. Lemon Creek is a neighborhood-scale, population-oriented site. Figure 8 is an aerial photo of the Lemon Creek area of Juneau.

## Traffic

The Lemon Creek site is approximately 48 meters west of Alaway Ave (a small local street with no traffic data) and 55 meters south of the Glacier Highway, which had 12,604 average daily traffic in 1998.

There shed is on the edge of a small, paved parking lot behind R&M Engineering.

## Sources

The Lemon Creek valley is isolated from the Mendenhall Valley to the north and from downtown Juneau to the south by tall mountains. With few exceptions, pollution sources outside the valley are not expected to impact the monitoring site at Lemon Creek. The sources of particulate matter within the Lemon Creek Valley include: residential wood smoke, a commercial incinerator, an asphalt plant, automobile exhaust, and fugitive dust.

Juneau International Airport is at the mouth of Mendenhall Valley, and may affect the Lemon Creek site when winds are from the west.

## Monitors

The equipment is located on the roof of an eight foot tall storage shed. The probe is at a height of approximately five meters above the ground. On the east side of the shed is a parking lot and residences. To the south, west and north are undeveloped woodlands. Figures 3-7 are photographs taken at the site**.**

There are trees to the west of the shed that appear in the photos to be taller than the sampler inlet. The drip line of the trees is approximately 7 meters (horizontal distance) from the sampler inlets, and they are therefore not considered an obstruction.

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[2] These values were determined using a 1:25,000 USGS topographical map and/or hand held GPS.

Figure 8 – Aerial photo of the Lemon Creek area. The red circle indicates the monitoring site.

**Equipment installed**

The particulate monitors are two Rupprecht & Pattashnick Partisol 2000 FRM samplers (serial numbers 200FA203469907 and 200FA203429907). The site is operated year round on an every third day schedule. The monitors were installed on 18 Dec, 1999.


Figure 9 – PM2.5 samplers at Lemon Creek site.

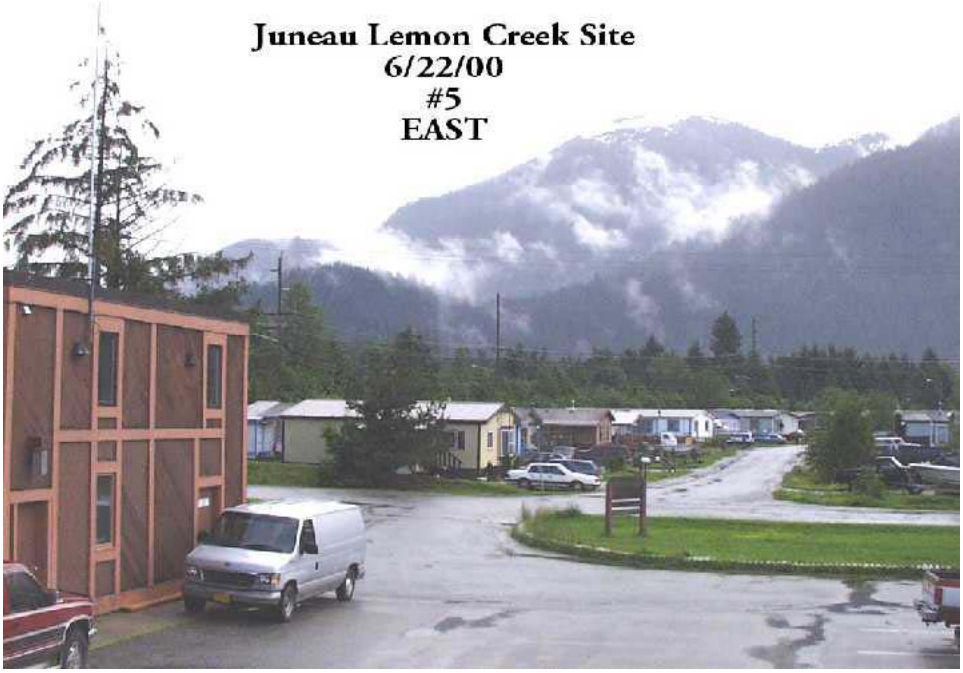


Figure 10 – View from samplers facing east.

Figure 11 – View from samplers facing south.

Figure 12 – View from samplers facing west.

Figure 13 – View from samplers facing north.